How do international youth transfers in football impact talent development?

by

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Abstract

In their battle for talented players, European football clubs try to attract the best players at ever younger ages. Instead of acquiring expensive, experienced players for the first team on the transfer market, younger players are bought at a much lower price, as they still require a final part of their training to be completed in the club academy. For players, the downside of this strategy is that they do not yet have the self-confidence or experience, nor the nearby support from family and friends to succeed in becoming a professional football player in a foreign country, where a lot of competition between players exists. This paper quantifies the impact of an international youth transfer on the short-run development of Belgian talents, both in sporting and financial terms. Based on panel data including 83 Belgian players aged below 23 and 413 observations, the fixed effects estimates prove that players leaving to England before having first team experience perform significantly worse than youth players who stayed in Belgium. Moreover, their market value and hence wages will also be lower. These observations are however not significant for youth transfers to the Netherlands or France. This implies that young players need to be warned for a youth transfer to England. Moreover, policy makers should also take this result into account and provide incentives to discourage such international youth transfers. Only after having acquired sufficient first team experience, an international transfer can be beneficial, not only for the players, but also for a country's national team.

JEL codes: L83, Z22, Z28.

Keywords: football, talent development, Belgian youth players, foreign academies, panel regressions, player market value.

1. Introduction

Recent transfer fee inflation has vastly increased the cost of acquiring football talent, leading to a revival of club interest in youth development, a relatively cheap talent development strategy. To guarantee a sufficient influx of talent in youth academies, clubs reacted by acquiring talented foreign players as young as 16 at relatively low costs (Di Minin et al., 2014). Although this is a profitable strategy for clubs, the implications for the young talents can be less favourable. They run a risk of a slower development, caused by personal and circumstantial factors such as lower self-confidence or an environment which is too competitive to stimulate youth development (Poli, Ravenel & Besson, 2016b). As a result, young players engaging in an international transfer might not be able to acquire the first team experience at a young age that is necessary to become strong professional players (Poli et al., 2016b). Oppositely, once players are full-grown and are regularly part of the national team, a transfer to a stronger foreign competition does prove to be beneficial for their performance (Berlinschi, Schokkaert & Swinnen, 2013) and income (Bryson, Rossi & Simmons, 2014).

The research objective of this paper is to quantify the impact of finishing the academy in a specific foreign country after an international youth transfer on a player's development during the first years of his professional career. Previous research qualitatively assessed the risks associated with transfers of young players. To the best of our knowledge, this is the first paper to perform a quantitative analysis assessing the risks associated with international transfers of young players, without first team experience. To this end, we constructed a unique dataset considering Belgian talents who finished the academy in Belgium, the Netherlands, England, France and Italy. The impact on both sporting performance and financial pay-offs is quantified through panel data regression estimations. Since the Premier League is an important destination for Belgian players, specific attention is paid to the added value of a premature move to England for a player's career. Our results

indicate that players finishing their education in England perform significantly worse than players who remain in Belgium. Their market value will be lower as well. This effect is not significant for neighbouring countries like France and the Netherlands, where the same languages as in Belgium are spoken and where youth players are regularly given playing opportunities. The results of this research provide young players considering a transfer to a foreign youth academy with a quantitative indication of the potential threats of such a move.

The remainder of this paper is organised as follows. The next section discusses the existing academic literature on youth development strategies of clubs and their implications for players. This paper's research question and research approach are developed in Section 3. Section 4 discusses the unique dataset gathered for this research and the considered variables. The methodology of panel regression techniques is explained in Section 5. Section 6 discusses the results. Section 7 derives the managerial implications and limitations. The final section presents the conclusions and potential avenues for further research.

2. Literature review

In this section, the literature related to youth development strategies of football clubs and the effects for individual players are discussed.

2.1 Talent development as part of a club's strategy

Clubs' and football associations' attention for youth development and its benefits to clubs' performance increased in recent years (Kleven, Landais & Saez, 2013). This is due to, for example, English football clubs having a rich history of wealthy private (foreign) owners intervening to pay for incurred losses in order to avoid financial crises (Buraimo, Simmons, & Szymanski, 2006), as well as lucrative broadcasting contracts with Sky Sports (Dobson & Gerrard, 1999). Such money influxes have recently become more common in wider European football and, as a result of club budget increases, inflated football transfer prices (Rohde &

Breuer, 2016a; 2016b). Compared to buying skilled, experienced and expensive players on the transfer market, developing youth players requires a one-time investment in infrastructure and a relatively low annual training cost. As a result, by investing in a youth academy, clubs need on average less money to attract talent to the first team squad than in case more experienced and expensive players are bought on the transfer market (Di Minin et al., 2014; Paché & Ika, 2016).

Oppositely, the need for short-term results in football has overshadowed long-term academy projects, as it takes time to successfully establish a youth academy and develop young, talented players into mature first-team players (Bullough & Mills, 2014). Moreover, youth players are less consistent in terms of performance, so that outstanding games could be followed by uninspired performances. The uncertain character of youth development may offset the advantage of its low costs. For example, a talented generation is sometimes followed by a less talented group of youngsters (Rohde & Breuer, 2016a; Relvas et al., 2010). A resulting shortage of strong first-team players then needs to be resolved by buying some expensive players on the transfer market anyway, in order to guarantee continuity of excellent sporting results.

To deal with the conflicting objectives of long-term development and short-term results, wealthy clubs started to engage in buying the most promising minors in large numbers from smaller clubs for their academy. Eschweiler and Vieth (2004) showed that a player's acquisition cost significantly rises with age, experience and development. Therefore, the most promising players are already sought after by wealthy, foreign clubs from a very early age, before having first team experience (Bailey, 2018; Reeves & Roberts, 2018). The cost for the acquiring club is relatively low, as clubs only need to pay a training compensation fee when they sign the player at the age of 16.

The FIFA (2001) training compensation system was actually designed to ensure that training clubs were adequately rewarded for the efforts and costs they incurred in training their young players. However, they do not account for the exponential transfer price increase once a talent breaks through (Kleven et al., 2013). As a result, the compensation is significantly lower than the player's actual value based on his inherent talent. To aggravate this imbalance, a court ruling of the European Court of Justice in 2010 declared these training compensations a violation of the free movement of workers (Lindholm, 2010). This led to an even lower fee after 2015, making foreign youth players even more attractive for big European clubs (Francis, 2016). This adds to the on-going monopolisation of football by the big clubs (Kesenne, 2007).

Football clubs' incomes are largely influenced by transfer fees (Mourao, 2016). The large surpluses earned on selling youngsters can be extremely lucrative. After benefiting from the players' contributions to sporting success, teams earn money on a subsequent transfer as well. Ajax Amsterdam, a well-known training club with many former academy players in their first team, generated a profit of more than €49.5 million in 2016 (Ajax Amsterdam, 2017). However, due to the Bosman ruling prohibiting transfer fees for end-of-contract players, the youth academy investment strategy became less profitable, as training clubs are no longer guaranteed full compensation of their investment (Feess & Muehlheusser, 2003).

2.2 Consequences of club strategies for young players

Wealthy clubs can bet on a large number of young talents. Only a few successfully developed academy players in the first team or sold at a relatively high transfer fee to another club, already offset the low acquisition cost of young players. Oppositely, the implications for talented young players engaging in such a transfer can be less beneficial and even impose a threat (Poli et al., 2016b). First team minutes at a young age are indispensable to develop as a player. Acquiring these minutes is much more difficult in a foreign academy, because many

players lack experience and self-confidence at this age to succeed in an unfamiliar environment (Poli et al., 2016b). To overcome difficulties in a highly competitive labour market, players at a young age often rely on their family and friends (Roderick, 2006). These close ties disappear for players who left their home environment at a young age. In case of an injury or bad performance, they have to face these fallbacks themselves. Since this proves very difficult for youngsters, it could hamper their development as a professional football player.[1] Only sufficient individual drive and determination could offset this negative effect.

Concerned about the development of young players, UEFA proposed in 2005 that from July 2008, a minimum of eight home-grown players must be included among the 25 players selected by clubs for its competitions: the UEFA Champions League and the UEFA Europa League. Similar rules were later on adopted by national associations, in order to guarantee sufficient playing opportunities for local players. From an economic viewpoint, it is plausible that this measure would increase the demand for and hence the price of home-grown players. In this way, the incentives to invest in local player development would increase. Unfortunately, the regulation also classified foreign players who have been sufficiently long at a club's youth academy as home-grown. In this way, the legislation failed to accomplish its objectives (Bullough & Mills, 2014).

2.3 Career paths of young Belgian talents

Belgian talents in particular have been in the situation of being attracted by a foreign academy or club. Especially England is a popular destination for Belgian youth players leaving their home country (Poli, Ravenel & Besson, 2016a). Belgian youngsters draw much attention of international clubs due to the excellent performances of Belgium's national team

[1] Unfortunately, too many promising talents who left their academy before having first team experience, did indeed not have the successful career that was predicted for them. In this light, we cite the example of Charly Musonda Jr., a promising talent from RSC Anderlecht. He left the Belgian team at the age of 16 for the academy of Chelsea. Afterwards however, at the age of 21, he did not acquire much success yet, expressed by his number of first team appearances (33), goals (2) and national team appearances (0).

players in the English Premier League (EPL). However, going to the EPL is risky. Large budgets allow EPL clubs to buy the best players on the transfer market, which intensifies competition among players for a first team spot (Elliot & Weedon, 2011). Additionally, the influx of youth players in the first team is hampered by the short-term orientation of EPL managers, following the fear of being sacked early (Bruinshoofd & Ter Weel, 2003; Barros, Frick & Passos, 2009; Hughes et al., 2010).[2] As a result, in the EPL, home-grown spots are filled with foreign players from the own academy and a steady decline in appearances made by young English players is observed over the last 20 years (Bullough & Millis, 2014).

Despite the EPL's threat of limited first team experience, which is crucial for a young player's development, many talented minors move to this competition. The EPL budget increases have allowed English teams to offer both the talented young player and his entourage considerable financial perks. Examples include housing, expensive cars and a job, in combination with a higher player salary compared to what a Belgian club is able to offer. Young football players struggle to reject short-term financial benefits that considerably improve the parents' socio-economic position, notwithstanding the risk of a detrimental impact on the career development. What these youth players often forget however, is that a player's main income is earned between the age of 23 and 33 years. Hence, better-trained players are able to earn substantially more than players choosing for short-term gains (Antonietti, 2006).

To add to the argumentation, English football academies are not necessarily better than Belgian or Dutch academies. Young talents do not necessarily need to leave for England in order to get high-quality training. In the list of 20 best European academies or training clubs of Poli, Ravenel and Besson (2015), Manchester United was the only English team

[2] As an example, we refer to former Ajax-coach Frank De Boer, known for his youth oriented management style. He was dismissed after only four EPL games at Crystal Palace in the 2017-2018 season.

included. Ajax Amsterdam, Feyenoord Rotterdam, PSV Eindhoven and Standard de Liège perform similar to Manchester United, but with much lower financial means.

3. Research question development and research approach

Existing research has only been able to explain qualitatively why leaving the native country as an academy football player can be detrimental for the own career. This paper adds to the body of knowledge by quantitatively testing this hypothesis. This paper answers the following research question: "How are career prospects (both financially and sportively) of a Belgian youth player affected by a premature move to a foreign youth academy?" To give a detailed answer to this question, the impact of transfers to different countries (England, Italy, the Netherlands and France) on sporting and financial success is analysed.

In sports economic literature, some papers estimate the impact of a number of variables on sporting success, transfer fees and salary empirically. Many papers analysing sporting success focus on a relationship between team performance and salary. Torgler and Schmidt (2007) investigated the pay-performance relationship, using panel data of over eight seasons in the German Bundesliga. Individual performance in the Bundesliga was explained by rather simple independent and control variables such as goals and assists, which measure only one aspect of a player's performance that is not even relevant for every player. Subjective player ratings could be another option in the absence of better alternatives (Frick, 2011). More accurate performance data, based on objective criteria, is often expensive to acquire.

Absolute salary, as well as relative salary differences between players have a positive impact on player performance. Additionally, team performance was added as an explanatory variable, which has not often been done previously. Playing in a stronger team is found to have a positive impact on individual performance (Torgler & Schmidt, 2007). Also

the strength of the opposition should not be overlooked in the analysis, as was proven by Ruijgh and van Ophem (2015). Additionally, the player's position and his age need to be included in the model as well. A positive linear term and negative second-order term for age reflect a player's path of improved performance followed by a decline at an older age (Ruijgh & van Ophem, 2015).

Speight and Thomas (1997) apply an econometric model to quantify the impact of arbitration settlements on transfer fees. They confirm the significant second-order age effect. Moreover, appearances and goals in the previous season should also be considered in the analysis. Also a difference between leagues had been observed. In order to analyse the impact of race on the transfer fee, Reilly and Witt (1995) and Medcalfe (2008) add this variable to the regression analysis. However, no relationship between transfer fee and race has been found. Moreover, they included caps (national team appearances) and the player's position as control variables.

Some other authors use salary as a dependent variable, such as Frick (2006). However, data on salaries is difficult to find. The player's market value could in that case serve as a good alternative, since it is related to his salary, with a correlation of 73.5% (Torgler & Schmidt, 2007; Gerhards, Mutz & Wagner, 2014). Market values can be collected from the website Transfermarkt (2018). They have been used as the dependent variable in the work of Garcia-del-Barrio and Pujol (2007), who related it to sporting performance, caps, European cup matches, nationality, position and age. Moreover, the positive relationship between salary and performance has been confirmed by Szymanski and Smith (1999) in the competitive English football industry.

4. Data description

To evaluate the impact of leaving Belgium for a foreign academy as a youth player, an unbalanced panel has been constructed. The panel consists of 83 Belgian football players in the period 2005-2018, with a total of 413 annual observations. Appendix A contains the names of the players included in the dataset. The minimum number of observations per player is two. On more than fifty percent of the players, five observations or more are available, whereas the maximum is eight. The selection of players was based on their talent. Promising players were identified through the SciSports *potential* indicator. The score for potential gives an indication of where a young player could be heading in terms of sporting performance. The SciSports algorithm compares the young player's current sporting performance with those of more established or older players who had a similar level when they were at that early stage in their career.

Out of the 100 most promising Belgian players aged 15 to 23, the upper age for which separate teams exist,[3] the players linked in the media to having the possibility of an international transfer in the observation period were selected. Football players form a heterogeneous group of individuals, since players who got an offer to be part of a foreign football club might have inherently different characteristics (in terms of talent, mentality and maturity) compared to players who did not get this offer and needed to stay in Belgium. Therefore, we only focus on players with an international transfer opportunity during their education period. In this way, we limit the analysis to a relatively homogeneous group of players. This approach moreover avoids the selection bias described by Frick (2007), namely that the probability of actually being transferred is not equal for all players. Here, all players had the opportunity to be transferred during their youth period to a foreign club. The decision to make this move however lay with the players.

[3] By excluding older players, the focus remains on the impact of a player's youth career path, while the impact of other effects such as experience and transfers made during the later years of the career is eliminated.

For the selected players, we collected a number of variables, which are explained and discussed in the next two sections. The descriptive statistics of both dependent and independent variables are provided in Table 1, whereas the correlation coefficients between the variables are included in Table 2.

TABLE 1 ABOUT HERE

TABLE 2 ABOUT HERE

4.1 Dependent variables

We quantify sporting *performance* at the end of a season through the SciSports performance indicator, SciSkill, collected for every player in every year. This allows measuring the impact of career decisions on the performance of a player. The SciSkill indicator accurately measures the performance of a player in terms of his influence and contribution to his own team's performance, taking also the strength of the opposing team into account. In this way, the variable is based on different objective criteria and observations (SciSports, 2018). It is a more comprehensive approach to performance than only considering goals, assists or clean sheets of a player. Moreover, the objective SciSkill index could also be a better alternative than the subjective player ratings of journalists published in newspapers.

For clubs and players, not only sporting performance matters, but also financial gains are important. To quantify a player's monetary value, many studies resort to a player's *market value*. The correlation between *performance* and *market value* in our dataset is only 65.3%. As a result, it is interesting to test how both *performance* and *market value* relate to the relevant explanatory variables. End-of-season market value data is freely available on the website of Transfermarkt (2018). The quality of this data source has been empirically verified by Peeters (2018). Moreover, market value contains some information about the players' individual financial situation, since players with a high market value also earn higher wages, as expressed by a high positive correlation between these two variables.

4.2 Independent variables

Explanatory variables that are often included in regression models for performance and market value have been constructed using Transfermarkt (2018). The variable *loan* is a dummy indicating whether a player has ever been loaned out during his career, in which case it takes the value '1'. It is expected that this way of granting a player first team experience has a positive impact on his performance. Also the number of *goals*, *assists* and minutes (*min_season*) played in the first team of the club during a particular season are included. These three variables are expected to positively affect market value. By aggregating the minutes played in first teams during the career, we construct *min_cum* (the cumulative number of minutes played) as an indicator of first team experience. It is expected to positively impact performance and market value. Because of a relatively high correlation between *min_season* and *min_cum*, one of these two eventually needs to be left out in the regression models. The number of *caps* of a player is also available on Transfermarkt (2018). National team players are expected to have a higher market value.

To account for the impact of the own team's characteristics, the number of *foreign players*, average *squad age*, and the *team strength*, expressed as the total market value of the players in the team minus the own market value, have been extracted from Transfermarkt (2018) as well. The presence of many foreign players is expected to negatively impact the dependent variable, since it is a limiting factor for first team playing opportunities. The impacts of *squad age* and *team strength* are ambiguous, since more experienced and strong players can also limit playing opportunities, but could as well enhance the performance of teammates. As a result, we expect a similar positive impact of team strength.

Since the impact of a player leaving his home country before finishing the academy is studied, the *country* dummy categorises the country where the player was most recently part of the academy. This variable can change during the education period and then remains

fixed once the player becomes part of a first team. This variable has been constructed using information from Transfermarkt (2018) and includes five countries: Belgium, the Netherlands, France, England and Italy. This variable allows meeting the research objective of quantifying the impact of the country where a player finishes his youth training on the dependent variables. Table 3 shows the distribution of observations over these different countries, as well as the year of observation. *Time* and *league* fixed effects are included in the models as control variables. Reilly and Witt (1995) found a positive correlation between the league's strength and the market value of an individual player.

TABLE 3 ABOUT HERE

5. Methodology

In this paper, panel regression techniques are applied to the panel dataset described in the previous section. The analyses are carried out using Stata 15. For each model specification, random effects (RE) and fixed effects (FE) estimators are calculated using robust standard errors in order to avoid bias from heteroscedasticity (Hill et al., 2017). This yields the same outcomes as clustering standard errors at the player's level. In order to decide on the most appropriate estimators, a Sargan-Hansen (SH) test for testing over-identifying restrictions is used as an alternative for the Hausman test, because robust standard errors have been used. Under the null hypothesis of the SH test, both the FE and RE estimators are consistent. Rejection of the null hypothesis implies that the RE estimator is not consistent and that FE estimators are to be used for the analysis.

In order to check for coefficient robustness, different models have been estimated for the two dependent variables. Each time, after estimating a model considering all relevant variables, variables with a p-value exceeding 0.3 are omitted. Moreover, the observations involving Italy as the final country of education have subsequently been omitted as well,

since only a limited number of players and observations on this country are available in the dataset. Finally, no transformations of the variables have been made, as the linear model yielded the highest explanatory power. However, the findings are robust for a logarithmic transformation of the variables.

6. Results and discussion

The outcomes of the regression analyses for *performance*, as measured by the SciSkill indicator, are included in Table 4. Table 4 is organised as follows. For each specification, the first column contains the RE estimates with robust standard errors. Below each RE model, the SH test statistic is given. Based on the significant SH test statistics in Table 4, we have each time rejected the null hypothesis and based the analysis on the FE estimates in the adjacent column. Column (2) contains the base model, with all variables considered. In column (4), the variables with a p-value exceeding 0.3 have been omitted. Column (6) omits *min_cum* from the analysis, and replaces it with another (correlated) variable that also measures experience: *min_season*. It can be seen that the model with *min_cum* has more explanatory power. Column (8) and further omit all observations involving Italy from the analysis, due to the limited number of players (i.e. four) and observations (i.e. 19) in the dataset. Columns (8) and (10) contain the same specifications as columns (2) and (4) respectively, but without the *country* dummy level for Italy. The model in column (12) additionally controls for the *potential* of a player. Column (14) again omits the variables with a p-value greater than 0.3. The models in columns (16) and (18), the latter without variables for which the p-value exceeds 0.3, include the interaction terms of *country* with *min_cum* and *loan*. In each model, *league* and *year* are included as control variables.

TABLE 4 ABOUT HERE

The calculated coefficients have the expected signs. The coefficients are moreover robust with respect to the different specifications in Table 4. Performance exhibits a significant, positive but decreasing relationship with *age*. Additionally, the positive sign for *min_cum* confirms the hypothesis that experience is of crucial importance for a player to be able to perform well in his career.

Young Belgian players finishing their education in the Premier League could significantly harm their future career performance, when compared to players who make their first team debut in their home country Belgium. In this way, the empirical results quantitatively prove the findings of Poli et al. (2016b). The regression models confirm the hypothesis that the intense competition for first team minutes in the Premier League and being far from their family and friends at home, negatively affect a player's career opportunities. In contrast to the negative coefficient for England, this effect is not significant for Belgium's neighbouring countries France and the Netherlands. This could be the result of two effects. First of all, French and Dutch teams systematically provide first team playing opportunities to young talents from their academies. Secondly, the fact that there are no language barriers in those countries and the closer location to a player's home environment could help reduce this negative effect of finishing a player's training in a foreign country's academy. FIFA (2018) follows this argument, as transfers of players who lived within a distance of 50 km from the border of the foreign country where their new club is located, are not considered international transfers. Neither for Italy is this foreign education effect significant, nor is it robust for the specification used. This could be the result of the limited number of observations on Italy.

The model controlling for *potential*, a proxy for a player's talent that is positively related to his performance, shows that having a lot of talent does not protect a player from the negative impact of finishing the training period in England. This was for example the case

with Charly Musonda Jr. Even though being an interesting variable, *potential* is left out of the other models because it is only a good proxy for talent. To accurately quantify a player's talent, specific individual tests would be required of every player in the same circumstances (Reilly, Williams, Nevill & Franks, 2000).

By including interaction effects of *country* with *min_cum* and *loan* using the same sample without Italy, robustness of the model is further demonstrated. The negative coefficient for England becomes larger in absolute value, whereas the interaction term between England and number of minutes is marginally significant and positive. This demonstrates that for players who finished their education in England, it could be even more important to gain experience through first team minutes, for which however a lot of competition exists in England.

The results regarding a player's market value are shown in Table 5. Table 5 has a similar structure as Table 4: again, both the RE and FE estimates are given, together with the SH test statistic. Here again, based on the significant SH test statistics in Table 5, we have each time rejected the null hypothesis and selected the FE estimates. Column (2) again contains the base model, of which the variables with a p-value exceeding 0.3 have been omitted in column (4). Column (6) shows that a model with *min_season* replacing *min_cum* to express first team experience has less explanatory power. In specification (8), the number of caps has been replaced by a national team dummy (*natteam*), to show model robustness. From column (10) on, Italy has again been left out of the sample, with columns (10) and (12) being based on the specifications of columns (2) and (4). In column (14), the variables *goals* and *assists*, which determine a player's performance, as well as the highly correlated *min_cum* and *min_season*, have been replaced by the SciSkill score, indicating player performance, as a robustness check. Column (18) includes the interaction terms of *country*

with *min_cum* and *loan*. In columns (16) and (20), the variables with a p-value exceeding 0.3 have again been left out.

TABLE 5 ABOUT HERE

The signs of the coefficients in Table 5 are as expected according to the observed correlations in Table 2. When a player gains first team experience (*min_cum*), his market value increases, whereas the positive effect of age is decreasing but not significant. Also the exposure resulting from international games (caps) increases a player's market value, as well as the number of goals scored. Additionally, we confirm the positive impact of the team's strength on the individual player's market value.

Moreover, the results bring to light that a premature move to the Premier League is associated with a significant decline of between four and five million euro in market value, compared to a player who finished his training in Belgium. Since a player's market value is correlated with his salary, the player's future individual financial wealth is also significantly reduced. From the other countries, only Italy exhibits a significant (positive) impact on market value. This effect is however not robust for the used sample. Omitting one observation involving finished training in Italy, might cause the sign of the coefficient to change. This might again be caused by the limited number of observations, for which these observations are subsequently left out.

Models (14) and (16) confirm the robustness of our findings. They show that good performances, which increase the market value as also anticipated by Carmichael, Forrest and Simmons (1999), do not protect against the negative impact of finishing the training period in England. The explanation might be twofold. First, England is confronted with an inflation of academy players, who do not make it to first teams of professional clubs in the end. Moreover, the salaries of young players in England are so high that it proves difficult for teams from other countries to acquire players from English Premier League academies and

pay their wages. This is reflected by a lower market value for players coming out of English academies.

The inclusion of interaction terms of *country* with *min_cum* and *loan*, using the reduced sample omitting Italy, further confirms that the model coefficients are robust. However, an interesting observation concerning the variable *loan* needs clarification. The loan dummy becomes significantly negative, but the interaction terms with England and the Netherlands are significantly positive, and larger in absolute value. The same holds for France, although this latter coefficient is not significant. Being loaned out to gain experience, for which too much competition exists in the own team, is important for players who made an international transfer as an academy player. For those players, the net impact on market value is positive. For players who stayed in Belgium however, the impact turns out to be negative. A loan from Belgium, a traditional destination for loaned players, is on the transfer market associated with players who are too weak for the highest levels of professional football. Such top players are expected to be at least able to gather first team minutes in a professional Belgian club. If first team opportunities can only be obtained through a loan from Belgium, usually to a weaker competition or club, a player's market value is negatively adjusted.

7. Managerial implications and limitations

The results present a robust answer to the research question. The impact of a youth transfer from Belgium to England on both a player's sporting performance as well as market value is significantly negative. Finishing the football academy in England slows down the development of young football players. Moreover, their market value will be lower, in turn resulting in lower salaries. As a result, players' managers are advised to warn their players for a move to England before having first team experience in the own Belgian competition.

Although the results have been derived for Belgian players moving to England, it is not unlikely that they will hold for players moving to England from other countries as well. However, the data do not allow verifying this, as more data involving players from other countries has to be collected and more analyses need to be carried out. In addition, the negative impact of a foreign move does not seem to hold for youth players moving from Belgium to the Netherlands or France. The reason could be that both countries present many first team playing opportunities to young players, or that both countries are situated close to Belgium and that the same languages are spoken. The data however do not allow gaining deeper insight into this relationship.

In case applying the presented methodology could provide more general quantitative evidence that international youth transfers in general have a negative impact on youth players, football associations are confronted with an incentive to economically or legally prevent or prohibit such international mobility of young, unexperienced players. Vermeire (2018) provides a more thorough economic analysis of such measures.

8. Conclusions and future research

In the available literature, a negative impact of youth transfers on the player's development was expected, based on different qualitative arguments. This paper adds to the current body of knowledge by providing quantitative evidence for such a significant negative impact on both sporting performance and market value in the short run for youngsters moving from Belgium to England. No significant effect was found for the Netherlands or France. Next to the place of youth education, performance is also determined by experience. The market value of a player is also determined by experience, exposure in the national team, team strength and own performance.

The findings in this paper have important implications for player management and policy makers. However, the findings are derived for the specific Belgian context. Additional research based on data from other European countries is required to make more general conclusions with respect to the impact of youth transfers in general and differences betwewen youth transfers to a nearby or to a more distant country. Moreover, supporting qualitative research could help gain more insight into the main factors that drive youth transfer success, such as competition in the clubs, the player's type of environment and personal player motivation and talent. Finally, economic and legal measures will have to be created to provide the right circumstances for successful youth development in European football.

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Appendix A. Overview of the 83 considered players.

Toby Alderweireld, Francesco Antonucci, Ismaïl Azzaoui, Zakaria Bakkali, Zohran Bassong, Samuel Bastien, Michy Batshuayi, Christian Benteke, Adrien Bongiovanni, Theo Bongonda, Indy Boonen, Mathias Bossaerts, Dedryck Boyata, Timothy Castagne, Nacer Chadli, Ibrahima Cissé, Milan Corryn, Thibaut Courtois, Florent Cuvelier, Lennerd Daneels, Jonathan De Bie, Kevin De Bruyne, Julien De Sart, Steven Defour, Moussa Dembélé, Jason Denayer, Leander Dendoncker, Cyriel Dessers, Landry Dimata, Xian Emmers, Björn Engels, Jason Eyanga-Lokilo, Wout Faes, Marouane Fellaini, Yannick Ferreira-Carrasco, Thomas Foket, Zihno Gano, Eden Hazard, Thorgan Hazard, David Henen, Bryan Heynen, Siebe Horemans, Adnan Januzaj, Andy Kawaya, Maxime Lestienne, Anthony Limbombe, Jordan Lukaku, Romelu Lukaku, Dodi Lukebakio, Isaac Mbenza, Brandon Mechele, Dries Mertens, Thomas Meunier, Senna Miangue, Kevin Mirallas, Ilias Moutha-Sebtaoui, Paul-José Mpoku, Charly Musonda Jr, Radja Nainggolan, Julien Ngoy, Loïs Openda, Divock Origi, Obbi Oulare, Andreas Pereira, Dennis Praet, Dante Rigo, Mats Rits, Davy Roef, Siebe Schrijvers, Matz Sels, Mile Svilar, Youri Tielemans, Leandro Trossard, Flor Van Den Eynden, Zinho Vanheusden, Dante Vanzeir, Thibaud Verlinden, Marnick Vermijl, Matthias Verreth, Louis Verstraete, Jan Vertonghen, Marco Weymans and Axel Witsel.

Table 1. Descriptive statistics

Variable		Mean	Std. Dev.	Min	Max	Observations
performance	overall	41.27862	30.89328	2	139.5	N = 413
	between		22.54814	3.95	87.51428	n = 83
	within		21.93603	-33.03567	100.1072	T-bar = 4.9759
market value	overall	4.671489	7.971586	.025	60	N = 413
	between		5.065661	.025	30	n = 83
	within		5.473385	-22.32851	34.97149	T-bar = 4.9759
potential	overall	74.74668	56.69267	5	1015	N = 413
	between		28.68843	5	203.8333	n = 83
	within		48.69225	-119.0867	885.9133	T-bar = 4.9759
loan	overall	.1428571	.3503515	0	1	N = 413
	between		.1957857	0	.8	n = 83
	within		.2958528	-.6571429	1	T-bar = 4.9759
age	overall	19.27361	2.111045	15	23	N = 413
	between		1.454567	16.5	22	n = 83
	within		1.672583	15.77361	22.77361	T-bar = 4.9759
min_season	overall	1432.182	1482.78	0	5137	N = 413
	between		1079.579	0	3436.571	n = 83
	within		1048.388	-1914.39	4804.182	T-bar = 4.9759
teamstrength	overall	127.9354	148.598	-.1	741.35	N = 413
	between		111.0504	14.806	514.9375	n = 83
	within		105.2163	-342.9021	552.8854	T-bar = 4.9759
squadage	overall	23.64562	1.865377	0	28.7	N = 413
	between		.9492753	18.725	26.03	n = 83
	within		1.643562	4.920617	32.62062	T-bar = 4.9759
foreignplayers	overall	19.42736	6.797833	0	47	N = 413
	between		5.082384	10.71429	38	n = 83
	within		5.251719	2.927361	37.99879	T-bar = 4.9759
min_cum	overall	4584.932	5447.001	0	26603	N = 413
	between		3699.911	0	12714	n = 83
	within		3927.992	-8039.068	19025.31	T-bar = 4.9759
goals	overall	3.474576	5.485856	0	29	N = 413
	between		3.8678	0	18	n = 83
	within		3.579903	-13.52542	21.22458	T-bar = 4.9759
assists	overall	2.668281	4.329161	0	28	N = 413

	between		2.946391	0	13.625	n = 83
	within		2.967492	-10.95672	18.41828	T-bar = 4.9759
caps	overall	4.142857	10.06515	0	60	N = 413
	between		6.620429	0	28.875	n = 83
	within		6.510391	-22.73214	35.26786	T-bar = 4.9759
natteam	overall	.2590799	.4386609	0	1	N = 413
	between		.3084629	0	1	n = 83
	within		.279449	-.6159201	1.13408	T-bar = 4.9759

Table 2. Correlations

	performance	*market value*	*potential*	*loan*	*age*	*min_season*	*teamstrength*	*squadage*	*foreign players*	*min_cum*	*goals*	*assists*	*caps*	*natteam*
performance	1.0000													
market value	0.6534	1.0000												
potential	0.5386	0.3488	1.0000											
loan	0.1197	-0.0282	0.0712	1.0000										
age	0.7621	0.4612	0.3764	0.1538	1.0000									
min_season	0.5585	0.5002	0.2693	0.0872	0.4884	1.0000								
teamstrength	0.0510	0.2522	0.1603	-0.1672	-0.0448	-0.2132	1.0000							
squadage	0.1282	0.0951	0.1427	0.0580	0.1773	-0.0992	0.2993	1.0000						
foreignplayers	-0.0202	0.1573	-0.0061	-0.2091	-0.0826	-0.0562	0.4650	0.1318	1.0000					
min_cum	0.8075	0.7692	0.3847	0.0503	0.7309	0.6992	0.0166	0.0541	0.0541	1.0000				
goals	0.4282	0.5287	0.2151	0.0177	0.3159	0.6598	-0.1069	-0.0606	-0.0139	0.5378	1.0000			
assists	0.4319	0.5116	0.2111	0.0377	0.3260	0.6555	-0.1029	-0.0509	-0.0304	0.5281	0.7300	1.0000		
caps	0.4913	0.7938	0.2297	-0.0265	0.4090	0.4617	0.1910	0.0871	0.1386	0.7372	0.4875	0.4163	1.0000	
natteam	0.4565	0.5809	0.2134	-0.0045	0.3741	0.6048	0.0726	0.0241	0.0451	0.6419	0.4894	0.4659	0.6942	1.0000

Table 3. Distribution of observations over the different years and values for the *country* dummy.

	Country					
Year	**Belgium**	**England**	**France**	**Italy**	**Netherlands**	**Total**
2005	1	0	0	0	1	2
2006	2	0	0	0	1	3
2007	4	0	0	1	2	7
2008	5	0	2	1	3	11
2009	7	0	2	1	3	13
2010	11	2	2	1	3	19
2011	13	4	3	1	3	24
2012	13	4	5	1	3	26
2013	20	6	5	0	1	32
2014	29	9	6	1	1	46
2015	32	10	5	1	2	50
2016	35	15	5	3	3	61
2017	34	14	7	4	4	63
2018	29	14	5	4	4	56
Total	**235**	**78**	**47**	**19**	**34**	**413**

Table 4. Regression results for dependent variable *performance*.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
VARIABLES	RE ROBUST	FE ROBUST	RE ROBUST	FE ROBUST	RE ROBUST	FE ROBUST	RE ROBUST	FE ROBUST	RE ROBUST	FE ROBUST
country(England)	-8.989**	-12.495**	-8.433*	-11.850**	-17.930***	-21.625***	-9.997**	-14.519***	-9.449**	-14.167***
	(4.545)	(4.886)	(4.528)	(4.970)	(5.358)	(6.060)	(4.558)	(4.775)	(4.575)	(4.870)
country(France)	1.579	6.148	2.104	6.675	-1.211	0.233	1.515	5.708	2.205	6.388
	(4.241)	(8.694)	(4.331)	(9.178)	(4.874)	(8.302)	(4.320)	(9.020)	(4.458)	(9.364)
country(Italy)	-7.583*	6.281	-6.537	6.240	-16.421***	-6.332				
	(4.488)	(6.352)	(4.176)	(5.814)	(5.011)	(5.775)				
country(Netherlands)	-2.270	-2.073	-2.067	-1.356	-4.469	-4.888	-2.368	-2.559	-2.175	-2.201
	(5.991)	(6.234)	(5.936)	(5.962)	(6.277)	(6.362)	(5.991)	(6.173)	(5.932)	(6.107)
loan	2.888	2.618	2.924	2.642	2.454	1.728	3.100	2.667	3.130	2.670
	(2.146)	(2.092)	(2.175)	(2.103)	(2.258)	(2.228)	(2.203)	(2.140)	(2.247)	(2.168)
age	-233.927***	-201.647***	-233.318***	-201.921***	-264.313***	-210.857**	-218.838***	-177.695**	-218.091***	-177.447**
	(65.823)	(67.521)	(66.433)	(68.265)	(80.474)	(87.820)	(66.638)	(67.921)	(67.183)	(68.214)
age^2	12.686***	11.260***	12.714***	11.310***	14.074***	11.583**	11.921***	10.083***	11.954***	10.083***
	(3.469)	(3.526)	(3.491)	(3.567)	(4.202)	(4.533)	(3.508)	(3.542)	(3.529)	(3.558)
age^3	-0.222***	-0.199***	-0.223***	-0.200***	-0.239***	-0.199**	-0.209***	-0.179***	-0.211***	-0.180***
	(0.060)	(0.061)	(0.060)	(0.062)	(0.072)	(0.077)	(0.061)	(0.061)	(0.061)	(0.062)
min_season	0.001	0.000			0.003***	0.002***	0.001	0.001		
	(0.001)	(0.001)			(0.001)	(0.001)	(0.001)	(0.001)		
teamstrength	0.011	0.010	0.010	0.009	0.015*	0.012	0.011	0.009	0.010	0.009
	(0.008)	(0.008)	(0.008)	(0.008)	(0.009)	(0.009)	(0.008)	(0.008)	(0.008)	(0.008)
squadage	0.126	0.348					0.389	0.625	0.423	0.647
	(0.492)	(0.495)					(0.493)	(0.495)	(0.486)	(0.486)
foreignplay	-0.225*	-0.191	-0.242*	-0.206	-0.051	-0.034	-0.187	-0.167	-0.205	-0.178
	(0.128)	(0.131)	(0.133)	(0.136)	(0.124)	(0.135)	(0.134)	(0.133)	(0.141)	(0.140)
min_cum	0.002***	0.002***	0.003***	0.002***			0.002***	0.002***	0.003***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)			(0.000)	(0.000)	(0.000)	(0.000)
potential										

England*min_cum										
France*min_cum										
Netherlands*min_cum										
England*loan										
France*loan										
Netherlands*loan										
league	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
year	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
constant	1,436.158***	1,155.538***	1,427.319***	1,161.628***	1,642.049***	1,242.897**	1,330.850***	984.425**	1,314.953***	986.719**
	(409.353)	(428.636)	(414.712)	(432.367)	(506.388)	(563.506)	(415.405)	(432.064)	(419.520)	(433.423)
Observations	413	413	413	413	413	413	394	394	394	394
R-squared (within)		0.878		0.877		0.856		0.881		0.880
Number of player	83	83	83	83	83	83	79	79	79	79
Sargan-Hansen statistic	526		543		1613		514		487	
Degrees of freedom for SH statistic	44		42		42		43		42	
p-value for Sargan-Hansen statistic	0		0		0		0		0	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 4 continued

VARIABLES	(11) RE ROBUST	(12) FE ROBUST	(13) RE ROBUST	(14) FE ROBUST	(15) RE ROBUST	(16) FE ROBUST	(17) RE ROBUST	(18) FE ROBUST
country(England)	-8.764*	-13.007***	-8.058*	-12.163**	-12.947***	-15.989***	-12.870***	-15.988***
	(4.475)	(4.784)	(4.377)	(4.741)	(4.491)	(5.008)	(4.469)	(5.072)
country(France)	1.686	6.378	1.914	6.171	-0.399	4.660	0.178	5.047
	(4.119)	(8.570)	(4.054)	(8.875)	(4.704)	(9.243)	(4.789)	(9.584)
country(Italy)								
country(Netherlands)	-2.259	-2.897	-1.778	-1.458	-0.337	-3.367	-0.855	-3.252
	(5.608)	(5.970)	(5.464)	(5.660)	(7.399)	(5.850)	(7.224)	(5.793)
loan	2.969	2.651	3.150*	2.828	1.607	1.510		
	(2.062)	(2.026)	(1.867)	(1.815)	(2.338)	(2.362)		
age	-206.331***	-169.808**	-199.844***	-164.514**	-202.402***	-169.627**	-202.605***	-170.559**
	(62.756)	(65.093)	(62.869)	(65.231)	(65.591)	(69.646)	(66.321)	(70.271)
age^2	11.118***	9.530***	10.829***	9.311***	11.058***	9.639***	11.167***	9.707***
	(3.307)	(3.392)	(3.302)	(3.402)	(3.459)	(3.634)	(3.487)	(3.666)
age^3	-0.193***	-0.167***	-0.189***	-0.164***	-0.194***	-0.171***	-0.198***	-0.173***
	(0.057)	(0.059)	(0.057)	(0.059)	(0.060)	(0.063)	(0.060)	(0.063)
min_season	0.001	0.000			0.001	0.001		
	(0.001)	(0.001)			(0.001)	(0.001)		
teamstrength	0.003	0.003			0.015*	0.013	0.014*	0.011
	(0.007)	(0.008)			(0.008)	(0.008)	(0.008)	(0.008)
squadage	0.095	0.357			0.351	0.559	0.433	0.616
	(0.466)	(0.467)			(0.487)	(0.486)	(0.483)	(0.484)
foreignplay	-0.102	-0.088			-0.185	-0.174	-0.211	-0.193
	(0.125)	(0.126)			(0.137)	(0.136)	(0.141)	(0.139)
min_cum	0.002***	0.002***	0.002***	0.002***	0.002***	0.002***	0.003***	0.002***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.001)

potential	0.061*	0.054**	0.064**	0.056**				
	(0.032)	(0.026)	(0.032)	(0.026)				
England*min_cum					0.002**	0.001	0.002**	0.001
					(0.001)	(0.001)	(0.001)	(0.001)
France*min_cum					0.000	0.000	0.000	0.000
					(0.000)	(0.000)	(0.000)	(0.000)
Netherlands*min_cum					-0.001	-0.001	-0.001	-0.001
					(0.001)	(0.001)	(0.001)	(0.001)
England*loan					3.067	2.806	4.830	4.310
					(5.151)	(4.961)	(4.950)	(4.829)
France*loan					3.572	3.387	5.424	5.061
					(5.673)	(5.812)	(4.745)	(4.929)
Netherlands*loan					-13.582**	-11.648*	-12.916**	-10.839*
					(5.995)	(6.225)	(5.608)	(5.967)
league	yes	yes	yes	yes	yes	yes	yes	yes
year	yes	yes	yes	yes	yes	yes	yes	yes
constant	1,275.133***	956.136**	1,227.749***	917.572**	1,225.896***	936.192**	1,211.825***	947.502**
	(391.603)	(415.804)	(393.726)	(413.954)	(407.727)	(441.548)	(413.615)	(445.785)
Observations	394	394	394	394	394	394	394	394
R-squared (within)		0.891		0.890		0.884		0.883
Number of player	79	79	79	79	79	79	79	79
Sargan-Hansen statistic	692		480		975		864	
Degrees of freedom for SH statistic	44		40		49		47	
p-value for Sargan-Hansen statistic	0		0		0		0	

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 5. Regression results for dependent variable *market value*

VARIABLES	(1) RE ROBUST	(2) FE ROBUST	(3) RE ROBUST	(4) FE ROBUST	(5) RE ROBUST	(6) FE ROBUST	(7) RE ROBUST	(8) FE ROBUST	(9) RE ROBUST	(10) FE ROBUST
country(England)	-2.092	-4.062**	-2.130	-3.807**	-3.140***	-4.941***	-3.873**	-7.016***	-2.206	-4.215**
	(1.357)	(1.647)	(1.307)	(1.603)	(1.118)	(1.463)	(1.582)	(2.035)	(1.357)	(1.721)
country(France)	1.277	3.912	1.753	4.091	0.876	3.190	3.428	4.068	0.997	3.831
	(2.761)	(3.517)	(2.871)	(3.594)	(3.031)	(3.509)	(3.235)	(2.826)	(2.691)	(3.509)
country(Italy)	2.259	16.038***	2.788	16.547***	0.930	15.367***	4.004**	8.372***		
	(2.470)	(1.637)	(2.507)	(1.970)	(2.708)	(1.744)	(1.739)	(1.903)		
country(Netherlands)	-1.654*	-2.234	-1.604*	-1.773	-2.053**	-2.554	-1.107	-1.861	-1.686*	-2.189
	(0.965)	(1.598)	(0.928)	(1.643)	(0.848)	(1.664)	(1.243)	(3.371)	(0.979)	(1.628)
loan	-0.458	-0.384							-0.317	-0.414
	(0.604)	(0.582)							(0.598)	(0.587)
age	19.050	30.577	22.930	32.880	12.868	26.519	38.459*	59.018**	20.895	33.056
	(19.877)	(23.018)	(20.954)	(23.806)	(21.357)	(25.583)	(21.167)	(23.886)	(21.008)	(23.990)
age^2	-0.939	-1.471	-1.127	-1.570	-0.644	-1.276	-1.988*	-2.968**	-1.038	-1.586
	(1.044)	(1.197)	(1.099)	(1.233)	(1.120)	(1.321)	(1.127)	(1.253)	(1.103)	(1.246)
age^3	0.015	0.023	0.018	0.025	0.011	0.021	0.034*	0.050**	0.017	0.025
	(0.018)	(0.021)	(0.019)	(0.021)	(0.019)	(0.023)	(0.020)	(0.022)	(0.019)	(0.021)
min_season	-0.000	-0.000			0.001***	0.000**			-0.000	-0.000
	(0.000)	(0.000)			(0.000)	(0.000)			(0.000)	(0.000)
teamstrength	0.007*	0.006*	0.006*	0.006**	0.007**	0.007**	0.007*	0.008**	0.007*	0.006*
	(0.004)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)	(0.003)
squadage	0.045	0.114							0.100	0.145
	(0.157)	(0.165)							(0.168)	(0.181)
foreignplay	-0.034	-0.023							0.004	-0.014
	(0.036)	(0.028)							(0.030)	(0.028)
min_cum	0.000**	0.000**	0.001***	0.000**			0.001***	0.001***	0.000**	0.000**
	(0.000)	(0.000)	(0.000)	(0.000)			(0.000)	(0.000)	(0.000)	(0.000)
goals	0.088	0.055							0.100	0.061
	(0.072)	(0.073)							(0.071)	(0.073)
assists	0.073	0.031							0.082	0.031
	(0.102)	(0.091)							(0.100)	(0.090)
caps	0.448***	0.568***	0.462***	0.567***	0.564***	0.650***			0.470***	0.571***
	(0.086)	(0.067)	(0.084)	(0.064)	(0.081)	(0.065)			(0.082)	(0.068)

natteam							0.985	0.355		
							(0.992)	(1.033)		
performance										
England*min_cum										
France*min_cum										
Netherlands*min_cum										
England*loan										
France*loan										
Netherlands*loan										
league	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
year	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
constant	-126.202	-214.490	-152.144	-231.447	-84.710	-186.267	-243.552*	-390.088**	-138.468	-232.829
	(125.302)	(147.522)	(131.779)	(153.354)	(134.636)	(164.748)	(131.269)	(150.931)	(132.510)	(154.333)
Observations	413	413	413	413	413	413	413	413	394	394
R-squared (within)		0.860		0.858		0.849		0.751		0.860
Number of player	83	83	83	83	83	83	83	83	79	79
Sargan-Hansen statistic	612		470		535		290		408	
Degrees of freedom for SH statistic	47		41		41		41		46	
p-value for Sargan-Hansen statistic	0		0		0		0		0	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5 continued.

VARIABLES	(11) RE ROBUST	(12) FE ROBUST	(13) RE ROBUST	(14) FE ROBUST	(15) RE ROBUST	(16) FE ROBUST	(17) RE ROBUST	(18) FE ROBUST	(19) RE ROBUST	(20) FE ROBUST
country(England)	-2.221*	-3.953**	-2.012*	-4.282***	-2.001*	-4.219***	-3.540**	-5.135***	-3.284**	-4.815***
	(1.325)	(1.674)	(1.058)	(1.594)	(1.057)	(1.572)	(1.593)	(1.773)	(1.549)	(1.745)
country(France)	1.545	4.034	1.035	3.330	1.056	3.353	-4.365**	0.911	-3.712**	0.853
	(2.850)	(3.613)	(2.892)	(3.456)	(2.877)	(3.391)	(1.829)	(3.112)	(1.697)	(3.194)
country(Italy)										
country(Netherlands)	-1.723*	-1.776	-2.003**	-2.278	-2.030**	-2.231	-1.140	-2.606	-1.553	-2.212
	(0.948)	(1.724)	(0.844)	(1.755)	(0.849)	(1.804)	(1.034)	(1.901)	(0.948)	(1.952)
loan			-0.707	-0.710	-0.740	-0.706	-1.776***	-1.952***	-1.946***	-1.951***
			(0.574)	(0.597)	(0.555)	(0.581)	(0.632)	(0.610)	(0.605)	(0.606)
age	23.729	35.340	32.167	37.949	30.897	37.656	28.661	34.007	28.470	36.126
	(21.867)	(24.710)	(24.287)	(27.724)	(23.983)	(27.702)	(18.403)	(23.759)	(19.452)	(24.675)
age^2	-1.168	-1.686	-1.636	-1.875	-1.569	-1.857	-1.486	-1.672	-1.444	-1.759
	(1.147)	(1.279)	(1.271)	(1.438)	(1.254)	(1.433)	(0.982)	(1.241)	(1.025)	(1.279)
age^3	0.019	0.027	0.027	0.031	0.026	0.030	0.025	0.027	0.024	0.028
	(0.020)	(0.022)	(0.022)	(0.025)	(0.022)	(0.025)	(0.017)	(0.021)	(0.018)	(0.022)
min_season							-0.000	-0.000		
							(0.000)	(0.000)		
teamstrength	0.007**	0.006**	0.006*	0.005*	0.006*	0.005*	0.009**	0.007**	0.008**	0.006*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.003)	(0.004)	(0.003)
squadage			0.015	0.050			0.140	0.171		
			(0.186)	(0.200)			(0.180)	(0.182)		
foreignplay			0.021	0.004			0.020	-0.019		
			(0.030)	(0.031)			(0.039)	(0.032)		
min_cum	0.001***	0.000**					0.000***	0.000**	0.001***	0.000**
	(0.000)	(0.000)					(0.000)	(0.000)	(0.000)	(0.000)
goals							0.117	0.058		
							(0.084)	(0.075)		
assists							0.099	0.004		
							(0.105)	(0.089)		
caps	0.488***	0.573***	0.571***	0.640***	0.572***	0.640***	0.368***	0.545***	0.402***	0.546***
	(0.079)	(0.065)	(0.076)	(0.065)	(0.074)	(0.062)	(0.093)	(0.060)	(0.093)	(0.061)
natteam										

performance			0.071***	0.042**	0.071***	0.042**				
			(0.020)	(0.019)	(0.020)	(0.019)				
England*min_cum							0.000	-0.000	0.000	-0.000
							(0.000)	(0.000)	(0.000)	(0.000)
France*min_cum							0.001*	0.000	0.001*	0.000
							(0.000)	(0.000)	(0.000)	(0.000)
Netherlands*min_cum							-0.000**	-0.000	-0.000*	-0.000
							(0.000)	(0.000)	(0.000)	(0.000)
England*loan							4.335***	3.863***	4.099***	3.744***
							(1.116)	(0.956)	(1.058)	(0.951)
France*loan							3.800	4.875	4.459**	4.806*
							(2.376)	(2.951)	(1.960)	(2.692)
Netherlands*loan							3.254***	3.205**	3.113***	3.266**
							(0.963)	(1.259)	(0.900)	(1.343)
league	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
year	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
constant	-156.086	-248.339	-209.517	-253.473	-200.868	-250.941	-185.490	-230.888	-183.962	-245.557
	(137.555)	(159.366)	(154.381)	(177.768)	(151.745)	(177.596)	(114.268)	(151.025)	(121.586)	(157.765)
Observations	394	394	394	394	394	394	394	394	394	394
R-squared (within)		0.858		0.851		0.851		0.872		0.871
Number of player	79	79	79	79	79	79	79	79	79	79
Sargan-Hansen statistic	480		412		331		3016		1456	
Degrees of freedom for SH statistic	40		43		40		52		47	
p-value for Sargan-Hansen statistic	0		0		0		0		0	

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1